



GOVERNMENT OF INDIA

MINISTRY OF TOURISM AND CIVIL AVIATION
(COMMISSION OF RAILWAY SAFETY)

RAILWAY ACCIDENT INVESTIGATION



Derailment

of

6 Down Allahabad—Gorakhpur Express Train
between

JAKHANIAN AND DULAHPUR STATIONS,
North Eastern Railway,

On

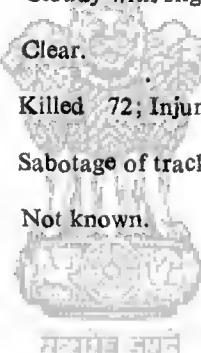
21st June, 1969.

C O R R I G E N D U M

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12	23	1	Delete 'and'.	
12	24	3	Add '43' before 'cms. vacuum'.	
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15	35(3)	2	B1-R1	L1-R1
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19	48(c)	2	as	was
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SUMMARY



G. S. PANDOR.

**GOVERNMENT OF INDIA
MINISTRY OF TOURISM & CIVIL AVIATION
(COMMISSION OF RLY. SAFETY)**

No. Dated,

From : The Additional Commissioner of Railway Safety,
North Eastern Circle, 6, Esplanade East,
Calcutta-1.

To : The Secretary to the Government of India,
Ministry of Tourism & Civil Aviation,
New Delhi.

Through : The Commissioner of Railway Safety, *Lucknow.*

Sir,

In accordance with Rule 10 of Railway Board's Notification No. 59-TTV/42/1 dated 11th April, 1966, I have the honour to report the results of my inquiry into the derailment of 6 down Allahabad Express train between Jakhnian and Dyalpur stations on the Varanasi-Bhatni Meter Gauge section of the Eastern Railway at about 01.10 hours on 21st June, 1969.

2. Inspection at Site.—(a) On 23rd and 25th June, 1969, in company with the Divisional Superintendent & Officers of Varanasi Division, the Senior Deputy Chief Engineer and the Deputy Chief Mechanical Engineer, Gorakhpur, I inspected —

- (i) the wreckage of the derailed locomotive and coaches at the site of the accident;
- (ii) the state of damage to the permanent way, to the steel work and masonry of the 5X40' girder bridge; and
- (iii) the intact track, scrutinised and test-checked the particulars recorded by the Permanent Way Inspector, for a distance of 373'/1209' in advance/in rear of the affected length.

I scrutinised the many photographs, taken at various angles, of the place at which the derailment occurred, and was satisfied that they correctly indicated the state of the rolling stock and the permanent way from the point of derailment upto the far end of the bridge as also the condition of the disjointed track and the undamaged track components, I desired additional photographs being taken of certain significant features for the purpose of my Report.

Field measurements taken for the preparation of drawings of the accident were scrutinised and necessary instructions given. Instructions were also issued to recover all rail fittings and sleeper fastenings, damaged or whole, mark them with paint and then to reassemble, at the foot of the bank, the rails, sleepers and track components in the order in which they were prior to the accident.

(b) The Accident took a heavy toll of fatalities and injuries to persons in the Train. On 25th June, I visited the injured who were admitted in the North Eastern Railway, the Civil and the Benaras Hindu University Medical College hospitals. The evidence of the 2nd fireman, who was admitted in the North Eastern Railway hospital, was recorded during the visit.

3. Inquiry.—(a) A press notification was issued on 21st June, 1969, inviting the public who had information bearing on the accident to appear at the Inquiry at Aunrihar station, or to communicate with me by post.

The District Magistrate and Superintendent of Police, Ghazipur, were informed of the Inquiry which I commenced on 24th June, 1969, at Aunrihar station, recording the evidence of several witnesses thereto upto 27th June, and thereafter at Varanasi upto 1st July.

(b) The Officers present at the Inquiry were —

Shri U. H. Mehta	Chief Engineer, North Eastern Railway, Gorakhpur.
Shri P. N. S. Bedi	Divisional Superintendent, North Eastern Railway, Varanasi.
Shri D. P. Sharma	Deputy Chief Operating Superintendent, North Eastern Railway, Gorakhpur.
Shri A. K. Chatterjee	Deputy Chief Mechanical Engineer, North Eastern Railway, Gorakhpur.
Shri Laiq Ahmed	Deputy Superintendent of Police, Gazipur, who attended on 24th June.
Shri Ram Bahadur Singh	Inspector, Crime Branch, C.I.D., who attended on 24th and 25th June.
Shri R. K. Verma	Inspector, Govt. Railway Police Gorakhpur, who attended on 24th June.

Evidence of 45 witnesses has been recorded and relevant exhibits filed.

Note 1—In this Report, the terms 'right' & 'left', 'leading' & 'trailing', and 'front' & 'rear' where used are in reference to the direction of travel of the 6 Down Express Train.

4. The Accident.—(a) At about 01.10 hours on the night of 20th/21st June 1969, the north-bound 6 Down Express Train, from Allahabad to Gorakhpur, became derailed on straight track at Km. 94/12-11 between Jakhanian and Dulahpur stations on the Varanasi-Bhatni single line M. G. section of the North Eastern Railway. The train, which consisted of 10 bogie coaches hauled by a YP locomotive, was fully vacuum braked. On examination, it was found that although the regulator was shut off, the vacuum brake handle was in the running position which showed that no application of brakes was made by the driver who was killed in the crash. The speed at derailment was 62 Km/h as indicated by the speed recording graph roll in the Telco speedometer-cum-recorder fitted in the cab of the locomotive. The weather was cloudy. The visibility in the engine headlight was clear.

(b) The point of derailment, an exposed running-off end of a rail on the right of the track axis, was about 164 feet from the first abutment of a plate-girdered bridge ahead. The bridge consisted of five 40' spans across the Mangai Nala, the maximum height from the bed to the underside of girder being about 22 feet. The sub-structure of the bridge is brick masonry, the approach embankments from toe to formation being pitched with dry rubble including the earth slopes around the pier abutments.

(c) The consequences of the accident were disastrous :

(i) The Engine, in its derailed condition, ploughed the ballast under steel trough sleepers nearly to the first abutment and destroyed the track on the bridge upto about 10 feet short of the far-end abutment. The drag of the sleepers which were forced out of square, some getting bunched together, caused undue stresses, particularly in the running rails on the right and the guard rails, resulting in their distortion and the rupture of a few rail joints. Moving without restraint, the engine veered further to the right, and left the bridge while on the 5th span. Its left side hitting the masonry pedestal of the far-end abutment and then the dry stone pitching, the engine came to rest on the slope at an inclination of about 80' left of vertical with its tender at nearly the same angle. It lay with its leading end about 15 feet ahead of the abutment and 20 feet to the right of and nearly parallel to the track axis. The draw bar between the engine and the tender was in tact.

(ii) Seven coaches behind the locomotive, which left the rails, followed it successively into derailment. Due to the retardation in front and the consequent recoil, the derailed coaches came to rest in concertina fashion. The 1st, 2nd and 3rd coaches precipitated down to the right on the nala bed. The 1st coach, a TLR i.e. Third Class-cum-luggage and Brake, lay capsized on its left, dislodged of both its trolleys. The 2nd coach lay capsized on its right with the 3rd coach partly upon it. The 3rd coach lay capsized

on its right at an angle of about 45' to the track, its front end crushing the steel super-structure of the 2nd coach. The 4th coach, with its rear end on the right side of the first abutment, had swerved by about 80' to the right, its leading end resting downwards on the nala bank. The 5th coach was inclined at about 30' right of vertical with its leading end 20 feet beyond the first abutment and its front right side resting against the rear end of the 4th coach; the left portion of its underframe was supported by the top flange of the right girder of the first span, the leading trolley was suspended and the trailing trolley had furrowed into the ballast. The 6th coach, which was completely derailed, had its front end caved in.

- (ii) The 7th coach was almost vertical with its leading trolley completely derailed and its trailing trolley partly derailed. The rear pair of wheels of the trailing trolley were on the rails behind the exposed rail end, while of its front pair, the left wheel was on the rail and the right wheel on the third steel trough sleeper from the rail end. This condition was due to the rail ahead of the exposed rail end not being in position. This rail lay practically undamaged with its head towards the traffic axis its "running-on end" at 6'-2" and its "running-off end" at 4'-2" from the centre line of track, and its farther end under the 7th coach near its leading trolley. Fishplates bolts and nuts, and steel keys lay undamaged and whole on the ballast and in the vicinity of the disjointed rail without a mark on any component. The 8th, 9th and 10th coaches stood in tact on the rails.
- (iv) The steel-sleepered track on the south approach and the wood-sleepered track on the girders were destroyed over an aggregate length of about 372 feet. A number of running rails and guard rails were distorted and disjointed, and most of the sleepers rendered unserviceable. The severe longitudinal forces caused by the derailed engine and coaches over the bridge resulted in the masonry of the second pier being cracked in a horizontal plane from one end of the cut water to the other at about 5' above bed level. Some stiffeners and top flange plates of the right side girders were damaged. The masonry in cut water portions on the right side of piers was broken in places on account of the locomotive and coaches dropping down the bridge.

5. **Casualties.**—(a) As a result of the accident, 63 persons died in the crash at site and 149 persons were injured, the injuries to 46 being classified as grievous, 90 as minor and 13 as trivial.

(b) Of the wounded, 9 grievously injured persons succumbed to their injuries, some on the way to admission in hospitals and some after being taken in. Fatalities were thus 72 as on 30th August, including the driver and the 1st fireman who succumbed to scald injuries.

(c) Dead bodies of persons who met their end in the accident were handed over to the Police by the Railway Authorities who rendered all necessary assistance.

II. RELIEF MEASURES.

6. **Intimation of the Accident.**—(a) Communication was interrupted as a result of derailed vehicles snapping all overhead wires and the guard of the train could not contact the control by the portable telephone from site. The conductor guard who was instructed to proceed on foot reached Jakhanian at 02.50 hours. The Assistant Station Master, Jakhanian, who was unable to contact the control at Varanasi, conveyed information on block wires from station to station successively. The Assistant Station Master at Aunrihar was, however, able to contact Varanasi control and conveyed the information of the accident. This was at 03.05 hours on 21st June. The control disseminated the information of the accident to all concerned, advised the civil and police officials at Ghazipur and ordered the medical van equipped with 'A' class equipment at Varanasi to proceed to site followed by the break-down train. Gorakhpur, the headquarters of the North Eastern Railway, was advised through Lucknow as Varanasi was unable to directly contact the railway headquarters.

The 2nd Fireman of the Train who had serious scald injuries walked to the station ahead and reached Dulahpur at 02.43 hours to convey the information of the accident. This was indeed creditable on his part. The Assistant Station Master, Dulahpur, was unable to contact the control

and, perforce, conveyed the information to Mau station on the block wires. The Assistant Station Master, Mau, advised the local railway and civil officials and medical practitioners and arranged for the medical van equipped with 'B' class equipment to proceed to the site of the accident.

(b) The Divisional Superintendent and officers of Varanasi Division reached the site by the breakdown train at 06.45 hours on 21st June. The General Manager and principal officers from Gorakhpur reached the site at 14.35 hours.

7. **Medical Attention** —(a) As much First Aid as possible was rendered at site by the Guard and a medical practitioner travelling in the train.

(b) Medical assistance and relief from various sources reached the site as detailed below :—

- (i) Assistant Medical Officer, Mau Jn., the Assistant Engineer and other railway Officials arrived at site with the 'B' Class Medical Van at 04.25 hours.
- (ii) Medical Van with 'A' Class equipment from Varanasi with Divisional Medical Officer, 5 doctors, and nursing staff reached the site at 05.50 hours.
- (iii) 'A' Scale Medical Van from Gorakhpur with Divisional Medical Officers and 5 doctors reached the site at 13.30 hours.

Help was offered by the Civil Surgeon, Ghazipur, when he visited the site at 08.00 hours.

This offer was not availed of as adequate arrangements had already been made. Valuable assistance was rendered by co-passengers and local villagers who served the needy with milk.

(c) The injured were conveyed from site to various stations for admission into hospitals as indicated below :—

- (i) Mau Jn. By 'B' Scale Medical Van which reached Mau at 07.30 hours.
- (ii) Azamgarh By a shuttle formed by detaching two coaches from 5 Up Express train which was terminated at Dulahpur. This shuttle reached Azamgarh at 10.00 hours.
- (iii) Varanasi By 'A' Scale Medical Van and two coaches of the 6 Dn. Express. This train reached Varanasi at 12.32 hours.

By previous arrangement, ambulances and road vehicles were kept ready to convey the injured to various hospitals. The injured were admitted in hospitals within an hour of the trains reaching the stations. The numbers admitted were as below :—

Varanasi	North Eastern Railway Hospital	42
	B.H.U. Medical College Hospital	7
	SSPG Civil Hospital	16
Mau	Civil Hospital	8
	Railway Hospital	1
Azamgarh	District Hospital	52
Deoria	Civil Hospital	1
		127

19 of the injured were discharged after First Aid in hospitals.

(d) Morphine and Pathaedine were administered in such cases as necessary at site. Intravenous drips were given as required. In some cases wounds were stitched at site. Tea and warm milk were served to the injured.

The Divisional Medical Officer, Varanasi and his team of doctors rendered very commendable service in looking after and taking care of the injured both before and after their admission into hospital. But for their untiring efforts, perhaps, a few more valuable lives might have been lost.

8. Relief and Breakdown Trains —(a) The stranded passengers were served tea and refreshments at site. Prior arrangements for supplying drinking water was made. Passengers going towards Mau were transported, some by the Mau Breakdown train and some in the coaches of the 5 Up which was terminated at Dulahpur and worked back. Those bound for Varanasi were cleared by a 'scratch rake', from out of 70 Down train which was earlier terminated at Aunrihar Junction.

(b) Breakdown Trains reached the site as indicated below :—

With 35 Ton crane from Varanasi	. . . . .	at 06.45 hours.
With 10 Ton crane from Mau	. . . . .	at 07.50 hours.
With 35 Ton crane from Gorakhpur	. . . . .	at 15.40 hours.

9. Clearance of wreckage and restoration of line —(a) Rescue and relief operations at site were completed before noon on 21st June, photographs of the general scene of the accident and special features were then taken. The police authorities did not permit the railway to commence the work of clearing wreckage until in the late evening of 22nd June.

Breakdown equipment was brought into use at 23.45 hours on 22nd June. The 6th and 7th coaches were railed and worked to Jakhanian station. The 5th coach needed flame cutting of such portions which infringed the actual moving dimensions. The engine and 4 coaches and a portion of the 5th coach at site are programmed to be slavaged at a later date.

(b) The second pier which was seriously damaged in the accident was suitably "rail-framed" by vertical and horizontal rails that were bent and clamped to firmness. The destroyed track was relaid with new rails on wood sleepers and the line restored for through running at 18.00 hours on 24th June with a restriction of Stop and Proceed at 8 Km/h. This restriction will continue until adequate repairs to the masonry and girders of the bridge are carried out.

III. COMPOSITION OF TRAIN AND DAMAGE

10. The Engine and Train —(a) The composition of the 6 Down Express Train was as under :—

(i) Engine—No. 2288 YP. type, built in 1955 in Germany. Put in service in 1956. Gross weight 97.07 Tons. Length over buffers 62' 7 $\frac{1}{2}$ ". Engine and Tender equipped with vacuum brake. Fitted with headlight in working order ahead of smoke box above centre line of boiler. Fitted with Teloc speedometer-cum-recorder in working order.

(ii) Coaches	1st No. 8918 TLR	Third Luggage and Brake	Steel body with IRS underframe	Built in 1963
	2nd No. 8194 GT	Generating, Third	Integral (ICF)	Built in 64-65
	3rd No. 7635 GTCG	Generating, Third 3 Tier	-do-	Built in 65
	4th No. 7645 GTCW	Generating Third 2-Tier	Integral (ICF)	Built in '64-'65
	5th No. 2460 GSY	Second Class	Wood body with steel panelling on IRS underframe.	Built in '48-'49
	6th No. 6808 FC	First Class	Integral (ICF)	Built in '48-'49
	7th No. 8082 GTY	Generating, Third with Ladies.	Integral (ICF)	Built in 1964.
	8th No. 5855 TPP	Postal Van and Third	Wood body with steel panelling on IRS underframe.	Built in 1958.
	9th No. 8106 GT	Generating, Third	Integral (ICF)	Built in '64-'65
	10th No. 8924 TLR	Third, Luggage	Steel body with IRS underframe.	Built in 1965.

All coaches were owned by the North Eastern Railway.

(b) The total length of the train over buffers, including the engine, was 704 feet, and its gross weight was 425 Tons.

The train was equipped with vacuum brakes and the calculated brake power of the train, based on accepted data, was 218 Tons.

(c) The aggregate carrying capacity of the 6 Down Express was 442. However, the number in the train at the time of the accident was estimated to be about 600.

11. **Disposition of Rolling stock and Damage** —(a) Disposition of the derailed rolling stock was as described in para 4(c) (i), (ii) & (iii).

(b) Significant damage to the Rolling Stock was as below :—

Engine No 2288 YP :—The roof of the Driver's Cabin bent and badly dented; steam manifold and middle safety valve broken and two other safety valves damaged; the dome lagging badly dented; Clack valves and chimney at the corner of the bolts broken; turbo generator dislodged from its bracket; smoke box wrapper plate on the right side of the boiler depressed and a hand rail bracket at this point broke. The regulator was in closed position, the ejector handle in the running position, the sealed speedometer with recorder in working order and the reversing lever in fore-gear at approximately 30% cut off.

The tender underframe as well as its brake gears suffered extensive damage, the right sole bar bent due to severe hitting, probably by a rail; the right longitudinal girder bore a deep dent mark at the centre; both trolleys dislodged because one pivot pinsheared and the other came off; leading pair of wheels of both trolleys spearatated from the axle guards. The coupling was intact but it had disengaged from the TLR 8918 in rear.

1st Coach—TLR 8918 :—The underframe as well as the super structure was extensively damaged, the former bent and buckled and the latter was torn and smashed to pieces. Both trolleys separated from the underframe, the front one lay upside down about 8' away from the coach in the rear of the tender and in line with it. The rear one was sticking up vertically with front pair of wheels partially burried in the ground. The rear axle of the trailing trolley bent, the wheel gauge being 1" tight. Grazing marks of masonry were visible on the bottom of equalising beam, sole and cradle bars of the rear trolley. The severely twisting of the leading end coupler was, perhaps, responsible for its uncoupling from the tender.

2nd Coach—GT 8194 :—The front end badly damaged. The coach shell buckled and crushed in the centre by the impact of the leading end of the coach in rear when it fell directly over it. The rear axle of the front trolley and front one of the trailing trolley slipped off the guides due to disengagement of safety straps. The sheared off yoke end coupler head at the rear remained attached to the hook end coupler of the coach in rear.

3rd Coach—GTOG 7635 :—The front end, which fell over the second coach, was badly crushed.

4th Coach—GTCW 7645 :—Except for the minor damage to both end panels, the coach was otherwise in good condition. The rear coupler snapped.

5th Coach—GSY 2460 :—Most of the wooden body at the leading end was totally destroyed as it struck against the rear end of the 4th coach which stood at right angles to and become foul of it. The rear end suffered comparatively minor damage. The underframe at both ends bucked and badly bent downward. The draw bar of the hook and coupler snapped.

6th Coach—FC 6808 :—It was more or less intact.

7th Coach—GTY 8082 :—There was no damage to the coach. Other 3 coaches of the train were intact on rails.

(c) Various dent and cut marks observed on rolling stock.

(i) **Locomotive**

Bogie wheels.

Left front wheel	One dent mark on flange.
Right front wheel	One dent mark at the top of flange.
Left rear wheel	One scratch mark from the root upto the top of flange.
Right rear wheel	Four dent marks at the top of flange.

Coupled wheels.

Left leading	One scratch mark at the top of flange.
Right leading	Scratch marks on the inner flange.
Right driving	Two abrasion marks on the face of tyre rivets.
Left trailing	One scratch mark on the outer face of flange.

Tender.

Front trolley.

Right front wheel	One dent mark on top of flange.
Right rear wheel	Three dent marks on top of flange.

(ii) Various dent and cut marks observed on coaches.

Coach No. 8918 TLR.

Front trolley.

Right front wheel	Two dent marks on tread of tyre.
Right rear wheel	One dent mark on outer edge of the flange.

Coach No. 8194 GT.

Front Trolley.

Left front wheel	(i) One dent mark at the top edge of flange. (ii) Three dent marks on the edge of tread of tyre. (iii) Two dent marks at the face of flange.
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12. Permanent Way—(a) For facility of references and as shown in the Accident plan, the track rails behind the first point of track rupture have been marked LO (Left) and RO (Right) then successively L1, L2,, R1, R2,, and so on; the rail lengths are referred to as LO-RO, L1-R1, and so on; the rail joints are referred to as LOL1, L1L2 ROR1, R1R2 and so on. The fore-end of LO-RO was 272'-6" in rear of the central line of Bridge No. 7 (5×40' girders) across Manghai.

(b) From a point 641' ahead of Km. post 95, 55 lbs. track was completely destroyed over a length of 372', 161',-6" on the approach to Bridge No. 7 and the rest over the bridge itself. Except disturbing the alignment, the left rails hardly suffered any damage.

The right rails, outside and under the derailed coaches over the bridge and on the river bed, lay with their heads at various angles bent and/or distorted, some with battered ends and some with fishplates intact. Some of the rails were dragged forward and/or side-ways, hanging from the bridge or had dropped from the Bridge on the river bed. A number of guard rails, 50 lbs. NS, particularly on the right side, were uprooted, twisted, and/or dragged side-ways. One of them was broken.

(c) At the first point of rupture of track, the joint ROR1 was dismembered of fishplates and one of them without fishbolts was lying parallel to the track axis over the 4th forward sleeper under the rail panel L1-R1 on inside of track close to the left rail. The rib on the outer face of the fishplate had a fresh wheel riding mark indicating that it was travelled over on its board side after its removal from the joint.

3 undamaged nuts were recovered from the vicinity of the open joint to the right. Besides, 4 bolts without nuts, 2 steel keys and a Mills spring loose jaw were lying in a bush, a few feet below the cess on the bank slope to the right. Another lot of 15 keys, a dog spike and a jaw was located in another bush at the toe of the bank on the same side, about 55 ft. ahead of the T.P. 94/11. A steel key and a fishbolt without nut were found in a stack of block kankar at the toe of the bank opposite the opened joint. A further lot of 10 steel keys was seen in a bush, about 46 ft. ahead of the opened joint, on the bank slope to the right. All these fittings were undamaged and bore no signs of violence.

(d) **Rails**—**Rail R1**—After the accident, it was seen lying on its side with head facing towards the track axis and had shifted forward by 1'-6" and laterally by 4'-6" from its original position at its running-on end and 2'-6" at the running-off end. Lip formation was observed at the running-off end as is common with many other rails in the Section. At 17 ft. from the running-on end, there is a distinct cut in metal on the edge of the foot towards the gauge face caused by wheel mounting and whence wheel-riding marks are seen on the web, practically, upto the running-off end. The rail was slightly bent laterally towards gauge face side, the versine being 5/8" over its entire length. Both undamaged ends had neither fishplates nor fishbolts. The holes in the rails were intact and did not show any sign of elongation.

Rail R2—At its running-on end, head web and foot had deep dent marks caused by the battering which it received from the passing wheels. This end was dismembered of fishplates and the fishbolt holes were normal.

Of the remaining 8 right rails, only R7 was in position on the bridge undisturbed. The rest were either buried in formation or under coaches, twisted, bent, hanging down the bridge or had dropped down the bridge. Rail R8, which was lying on the floor of the first coach, had pierced it at its leading end and R5 one of the vacuum chambers of the second coach.

(e) **Fishplates**—In 372' of disturbed track, Joints No. R0R1, R1R2, R3R4, R4R5, R6R7, R7R8 & R8R9 were completely dismembered of fishplates. Only R2R3 and R9R10 were intact with fishplates. A pair of fishplates was found attached to the running-on end of R6. None of the left rail joints was disturbed. All the 20 fishplates that were required to fasten the right hand rails have been recovered.

(f) Details of fishplates, bolts and nuts as found intact with joints are detailed below :—

Joint No.	Fishplates	স্থান	Bolts & Nuts
R0R1	Nil.		Nil.
R1R2	Nil.		Nil.
R2R3	2 Nos.	Inner 1 bolt + Nut....with R2. outer 1 bolt + Nut....with R3.	
R3R4	Nil.		Nil.
R4R5	Nil.		Nil.
R5R6	2 with R6		2+2 with R6.
R6R7	Nil.		Nil.
R7R8	Nil.		Nil.
R8R9	Nil.		Nil.
R9R10	2 Nos.		4+4.

Most of the fishplates and bolts had dent and/or grazing marks. Of the 40 bolts that were necessary for fastening 10 right joints, so far 35, either intact or damaged, have been recovered.

(g) **Sleepers**—Except the first joint steel sleeper underneath the running-on end of R1, the point of rupture of track, all other steel sleepers, in the approach to the bridge were dented, flattened out, twisted and/or bent upward. 9 wooden sleepers under the flared end of guard rails and 129 bridge timbers were either badly crushed or smashed to pieces.

(h) Keys and Dog-spikes

(i) No steel keys could be recovered in the vicinity of rail R1, although, definite search was made. So far 146 keys and 117 mills spring loose jaws could be accounted for as against 236 of each used in the steel sleepered portion of the track.

(ii) Most of the Dog-spikes between the left running and guard rails had their heads dented by passing wheels. Of the 1894 Dog-spikes required for fixing the running and guard rails, 1664 have been recovered.

13. The damaged to the Rolling Stock, the permanent way and the girder bridge has been described in para 4(c) previous. The North Eastern Railway has estimated the cost of damage at Rs. 7,63,000.

Locomotive and Coaches	Rs.	7,25,000
The Track	Rs.	18,000
The Girder Bridge	Rs.	20,000
Total	Rs.	7,63,000

IV. LOCAL CONDITION

14. **Sectional and Site Features** —(a) The site where the accident occurred is about 67.50 kilometers north of Varanasi, 4.40 kilometers north of Jakhanian station and about 4.10 kilometers south of Dulahpur station. The 6 Down Express Train was signalled to run through Jakhanian station. Most of the stations on the Aunrihar Jn.—Bhatni section are equipped for 'B' class working with rudimentary interlocking. Signals are 2 aspect lower quadrant semaphore.

The alignment from Jakhanian to Dulahpur is straight. The grades are negligible. The approaches towards the $5 \times 40'$ girder bridge on either side are on 1 in 400 rising grade. On either side of the place where the accident occurred, the lie of the land is flat and cultivated. The nearest habitation are 2000 feet to the right and 3000 feet to the left of the site where the accident occurred.

(b) The permanent way consists of 55 lbs. rails, each 39' long laid on 4-keys steel trough sleepers, with spring, steel loose jaws, to N+3 density over 3" to 4" depth of stone ballast. The wear of rails is negligible, being less than 1%.

On the girder bridge, wood sleepers with bearing plates and 4 Dog-spikes per rail seat are used, each sleeper being fastened to the girder with hook bolts. Second hand 50 lbs. rails are used as guard rails on the bridge, these being fastened with dog-spikes to the bridge timbers.

(c) The maximum permissible speed on the section is 75 Km/h except at stations where due to rudimentary interlocking, a speed over the points in the facing and trailing directions is restricted to 15 Km/h. On the day there was no temporary speed restriction to be observed on the section between Varanasi and Mau Jn.

V. SUMMARY OF EVIDENCE

15. **Guard S. H. Singh** of 6 Down Express train had 48 hours home station rest before he took over charge of the train at Varanasi on 20th June. The train left Varanasi at 23.19 hours, 4 minutes late. At Varanasi City where it was booked to stop, the train suffered further detention of 13 minutes to cross 17 Up Passenger train. It was pulled up by someone near the Down Home signal of Kadipur where it lost further 5 minutes. The train finally reached Aunrihar Jn. at 00.28 hours and left at 00.33 hours, 24 minutes late. Thereafter, it ran non-stop and passed through Jakhanian on clear signals at 01.04 hours and met with an accident at 01.10 hours on 21st. No Caution Order was served to observe cautious driving between Varanasi and Mau Jn. Shortly after leaving Jakhanian, he felt a sudden jerk and vacuum started dropping. At that moment he thought that someone must have pulled the communication chord but the roaring sound, which soon followed, gave him the feeling that something untoward had happened to the train. Vacuum was then applied but the train stopped within 10 to 15 yards. On alighting, he flashed the torch light towards the front and could see some carriages off the track. He then

ran to the rear to protect the train. Returning after 15 minutes, he tried to contact control through the train's portable telephone but failed to do so as the overhead wires had snapped in the mishap. It was then arranged to send a message to Jakhanian station through the Conductor Guard on foot : "The train met with an accident at 01.10 hours and breakdown train and medical van urgently required." Detailed examination of the train from the rear was then undertaken. It was observed in the light of his torch that the last 3 coaches of the train were intact on rails. The coach No. 8082, 4th from the rear, had derailed of the front trolley and the right leading wheel — of the trailing trolley. A little ahead of the right rearmost trailing wheel of the coach, the joint of right rail was dismembered of fishplates and had no fishbolts. The rail ahead of the exposed joint had shifted to the right. The first class coach No. 6808, 5th from the rear, had also derailed completely but was standing upright on the bank with slight inclination to the right. The coach No. 2460, 6th from the rear, derailed of all wheels, was partly beyond the abutment. The rear trolley had furrowed deep into ballast. The superstructure at the front end of the coach was broken to pieces when it struck against the rear end of the coach ahead, which became fouled of it. The 2-tier coach No. 7645, 7th from the rear, was standing upright along the bank slope, practically at right-angle to the track. The 3-tier coach No. 7635, 8th from the rear, lay capsized on its right diagonally across the stream. Its leading end had fallen on the top of the coach ahead, which capsized on the river bed. He did not go across the stream but could see from there that the engine and two coaches had capsized on the river bed. On his way back, about 25 minutes later, he found 4 bolts without nuts and 3 steel keys lying in a bush on the slope of the bank to the right in the vicinity of the exposed joint. Suspecting there might be some more such loose materials, he searched in another bush on the same side and discovered 7 more steel keys. The RPF Sainiks, escorting the railway's cash safe, who were present during his survey, were then deputed to watch these loose materials detected in the bushes. These were subsequently shown to the Assistant Engineer, Mau Jn., who reached the site at 04.45 hours by the Mau Medical Van. Returning to the brakevan, he started rendering First Aid to whomsoever came there.

To questions, the witness replied : The train at derailment was running at 65 to 66 Km/h; 16" vacuum was maintained right through; no difficulty was experienced in stopping the train enroute; approximate 600 passengers were in the train against the sitting capacity of 442; it was cloudy with slight drizzle; except the railway's cash safe, no other valuable was booked by the train. he did not look for loose permanent way materials on the left as rails on that side were intact, anti-social element was seen at the site of the accident; a doctor in the train helped in rendering First Aid, using his First Aid box.

16. **RPF Sainik, Ram Ugrah Singh of Varanasi** boarded the Guard's brakevan of 6 Down at Varanasi on 20/21st June to escort the railway's cash safe being carried in it. After leaving Jakhanian, a severe jerk was felt which threw him down on the floor. By the time he could get up, another jerk was felt. He confirmed the evidence of the Guard in regard to exposed joint of the right rail under the trailing trolley of the 7th coach and loose fittings found in two bushes. On instructions from him he took up position on the left and his companion on the right to watch the loose permanent way fittings and the train.

To questions, the witness replied : He could not say the speed of the train before the accident; as pointed out by the Guard the accident occurred at 01.10 hours; it was cloudy and a few minutes after the accident, it started drizzling; he was on duty upto 5 O'clock when he was relieved by another RPF Sainik.

17. **RPF Sainik, Ram Adhar Misra of Varanasi** was travelling from Varanasi in Guard's brakevan of 6 Down on 20/21st June 1969, for escorting the railway's cash safe being carried by the train. He corroborated the evidence of his companion—para 16.

18. **Second Fireman, C. B. Yadava of 6 Down train** stated that the engine was working normally and the brakes were functioning efficiently right through. The engine headlight was burning throughout. While standing on the foot-plate pulling coal, the engine got derailed just before approaching the Bridge No. 7 between Jakhanian and Dulahpur station. No sooner the sound of the derailment was heard, he left the work and caught hold of the handles on the left with both hands. When he saw the bridge ahead, out of nervousness everything became blank to him. He could not remember what happened thereafter. On regaining consciousness after the accident, he shouted for the Driver and the other Fireman but got no response. He somehow managed to get out of the engine cab and walked up to Dulahpur station despite severe scald injuries on his foot.

To questions, the witness replied : No lurch was felt on the run before the accident; he could not say the speed of the train at derailment; as his mind had become absolutely blank on seeing the bridge ahead; he could not say whether the Driver had shut the steam regulator before or after the accident.

19. **Assistant Station Master, H. S. Lal of Jakhanian** received line clear for 6 Down Express train from Dulahpur at 00.26 hours. It passed through his station on clear signals at 01.05 hours. When he did not receive the Train Out of Section report from Dulahpur within the booked running time, he started making enquiries from the latter station on block wires, the Control phone being out of order, but got no response. He then sent for the Gang Mate and advised him to proceed to the section to ascertain the position of 6 Down Express train. The latter left his office at 01.35 hours. At about 02.50 hours, the Conductor Guard of 6 Down who reached his station on foot gave a memo; "6 Down Express derailed and capsized at Km. 94/12-10 on a bridge. Breakdown train and medical van assistance required at once." The information was promptly transmitted to Control through Block wires, the communication being interrupted. He then arranged with the other Assistant Station Master, the Station Master being out of headquarters, to proceed to site with three petromaxes, a few buckets and a torch light. The Block Development Doctor and the Block Development Officer were advised of the accident. The Doctor, who visited him at 03.25 hours, left soon after taking full particulars of the accident from him.

To questions, the witness replied: The engine headlight was burning when it passed his station; he exchanged all right signal.

20. **Assistant Station Master, O. N. Vaish of Dulahpur**, who granted Line Clear for 6 Down at 00.25 hours on 21st June, received the Train Entering Section report from Jakhanian station at 01.04 hours. When it failed to reach his station within the booked running time, he started contacting Jakhanian on Block Instrument, the Control phone being out of order. The needle of the instrument was functioning but the phone was inoperative. He then deputed one of the gangmen at 01.35 hours to go over the section for ascertaining the whereabouts of the train. As he was awaiting the news, the Second Fireman of the train reached his office at 02.43 hours and informed him that the train has derailed and the engine and some bogies have fallen down the bridge. Immediate relief was urgently required. The information was quickly passed on to Mau Jn. through Block wires, the communication being interrupted. In the meantime it was arranged with the Guard of 5 Up, which was detained at his station, to proceed to the site at 03.30 hours with the engine and TLR and some volunteers. The Mau Medical Van left his station for the site at 04.10 hours and returned at 06.20 hours. The following trains had preceded the 6 Down Express between 17.44 hours and 23.35 hours on 20th June on Jakhanian—Dulahpur Block Section.

Train No.	Departure Jakhanian	Arrival Dulahpur
72 Down Passenger . . .	17.44 hours	17.58 hours.
6 M. B. Goods . . .	19.00 hours	19.20 hours.
Dn. GKP SPL (Goods) . . .	20.08 hours	20.30 hours.
Dn. GD SPL (Goods) . . .	22.00 hours	22.20 hours.
76 Dn. Passenger . . .	23.22 hours	23.35 hours.
71 Up Passenger . . .	21.00 hours	21.12 hours.
3 MB Goods . . .	22.30 hours	22.50 hours.

21. **H. L. Srivastava, Coach Attendant of first Class coach No. 6808 of 6 Down** felt two successive jerks in the approach to Bridge No. 7 while sitting on the seat in the corridor, which almost threw him down on the floor. The coach had completely derailed but it remained upright on the formation.

To questions, the witness replied : No one in the coach was injured; according to some of the passengers, the accident occurred at 01.10 hours.

22. **Brakesman, R. N. Lal of 6 Down** was travelling in the Guard's brakevan in the rear of the train. The jerk, that was felt by him after leaving Jakhnian, threw him down on the floor. It was followed by another one. On instructions from the Guard, he protected the train from the front.

To questions, the witness replied : The speed of the train at derailment, which occurred at 01.10 hours, was about 60 to 70 Km/h; it was cloudy and started drizzling 5 to 10 minutes after the accident.

23. **Train Examiner, R. D. Rai of Allahabad City** was in charge and of maintenance of the 6 Down rake before its departure on 20th June. 7 coaches were examined on the pit line and attended to as required. 3 other coaches viz. 8082 GTY, 8106 GT and 8924 TLR were dealt with in the yard. No serious defects came to light. Some of the coaches left without mirrors and composite chutes as the same were out of stock. The defects in undergear of the coaches observed and attended to are detailed below :—

8918 TLR	2 brake blocks, which had reverses were adjusted. One of the truss bar nuts, which had worn out, was replaced.
2460 GSY	Loose break rails tightened.
8924 TLR	4 worn brake blocks were replaced.

Vacuum cylinders of all the 7 coaches, examined on the pit line, were in working order and no leakage was observed when tested with vacuum exhauster. The cylinders of the other 3 coaches were also found in working order when checked by lever pulling.

24. **Train Examiner, Train Passing, Jag Narain of Allahabad City** made normal routine check of 6 Down rake on platform before its departure and found no defects. The train left with 45 cms. vacuum in the engine, and 42 cms. in the Guard's brakevan.

25. **Train Examiner, T. Prasad of Varanasi** examined the 6 Down rake on its arrival from Allahabad and found no defect. The train, according to vacuum certificate acknowledged by the Driver and the Guard, left with 45 cms. and 40 cms. vacuum in the engine and the Guard's brakevan respectively.

26. **Loco Foreman, Ram Saran of Varanasi** reached the site of the accident at 06.45 hours by the Varanasi Breakdown train. His first job was to attend to rescue operations to extricate the injured and dead from the capsized coaches. Having completed the work at 06.00 hours on 22nd, he examined the engine and found :—

- (i) the regulator in closed position.
- (ii) the vacuum ejector handle in running position, indicating brakes were not applied.
- (iii) the reversing lever at approximately 30% cut off, which is the normal running position.
- (iv) the engine fitted with TELOC speed indicator and recorder and was sealed. It was left undisturbed.
- (v) the gauge glass steam cock flange joints and both gauge glasses broken.
- (vi) the middle safety valve broken and those on either side of it damaged. The steam manifold also broken.
- (vii) both engine vacuum cylinders in released position, and both tender vacuum cylinders in applied position.
- (viii) the turbo generator severed from its holding bracket.
- (ix) headlight intact.
- (x) spring gear intact, left side trailing front spring hanger displaced at the top end and the cotter fallen down.
- (xi) all stay plates of the engine intact.
- (xii) the tender brake gear suffered minor damage.
- (xiii) out of 8 stay plates of tender, six were in position and two lying on the ground.

Along with the Permanent Way Inspector, searched was made for about half a mile in rear of the first point of derailment to ascertain whether any part of the rolling stock had fallen down but found none. On getting permission from the police, restorations were commenced at 23.30 hours on 22nd and completed at 14.45 hours on 24th, leaving behind the locomotive, first four coaches and a part of the 5th coach, which did not infringe the moving deminsions, to be salvaged at a later date.

The engine No. 2288 YP involved in the accident had received corrective as well as maintenance attention in workshops and shed on dates detailed below :—

Last POH	9/67.
Last IOH	10/68
Kilometrage earned since last IOH	55,793
Kilometrage earned since last POH	1,38,325
Date of last Schedule I examination	17-6-69.
Kilometrage earned since last Schedule I examination	795
Date of last Schedule II examination	5-6-69
Kilometrage earned since last Schedule II examination	3,986
Date of last Schedule III examination	7-3-69.
Kilometrage earned since last Schedule III examination	26,430.

Since its last IOH, the locomotive had earned 55,793 Kms. on 30th April when it was due Schedule IV examination, which was however, not carried out on due date viz. 30th April on account of large number of staff absenting. Despite this, the general condition of the locomotive was satisfactory and was, therefore, allowed to continue in service.

The nature of defects booked by Drivers during the preceding 3 trips and action taken were as below :—

18-6-69

- (i) Both side injectors to clean
- (ii) Full tender coal to be provided

19-6-69

- (i) Right side top clack valve joint broken
- (ii) Both side little ends knocking
- (iii) Both side piston gland blowing badly
- (iv) Left side bottom gauge glass nut leaking
- (v) Both side injectors to clean
- (vi) Headlight cover glass broken
- (vii) Left side bottom injector steam cock socket leaking

20-6-69

- (i) Left side bottom injector steam cock socket to lap
- (ii) Both side leading axle box to pack
- (iii) Lubricating steam cock nut to lap on boiler
- (iv) Both side little end knocking
- (v) Both side gudgeon pin nut to tight

The ill-fated train was being worked by Driver P. C. Banerjee who had recently come on transfer on 6-5-69 from Sonepore District.

To questions, the witness replied : By the term 'Examined' found in the repair column of Engine Repair Book implied that the defect in question was checked and immediate repairs were not considered necessary from the safety point of view; the omission of recording the details of repair carried out against entries dated 2-6-69, 3-6-69 and 15-6-69 made by Drivers in the Engine Repair Book was due to negligence of the Fitter Mistry. However, these must have been attended to as no Driver would take over the engine without satisfying himself that the required reapsirs have been duly carried out.

27. Assistant Mechanical Engineer (Loco) J. D. Michael of Varanasi, who examined the locomotive on 22-6-69, confirmed the observations made by the Loco Foreman vide para 26. He testified to the damage suffered by the engine given in para 11 (b).

During the Schedule III examination on 17-3-69, tyre and flange measurements of the locomotive hauling 6 Down were taken and axle box clearances checked. As these measurements were well within the permissible limits and not likely to be altered materially in such a short time, the locomotive was not withdrawn from service on 30th April, 1969, when Schedule IV examination was due. The wheel tyre and flange measurements taken after the accident have not exceeded the permissible limits. Axle boxes clearances could not be checked as the locomotive is yet to be railed.

28. Divisional Mechanical Engineer, B. D. Nirula of Varanasi, reaching the site at 06.45 hours by the Breakdown train, organised necessary rescue operations. At about 07.30 hours, he inspected the affected track and the rolling stock with a view to ascertain the cause of derailment. He corroborated the evidence of the Divisional Engineer (I) in regard to track particulars—para 39.

The locomotive was examined by him at 12.30 hours and testified the results of examination carried out by the Loco Foreman. He also supported the evidence of the Foreman in regard to various correctives and maintenance schedules received by the locomotive—para 26.

He confirmed the damage suffered by the engine and the coaches detailed in para 11 (b). From the nature of damage to the rolling stock, it appeared to him to be the after effect of the accident.

The riding quality of the locomotive was excellent as it is supported by the absence of any such entry in the Repair Booking Register. The Second Fireman of the ill-fated train stated that there were no defects in the engine. The driver, who worked the engine on the previous trip was satisfied with its riding. The Senior Loco & Fuel Inspector who travelled on the foot-plate of the engine on 25-5-69 has nothing adverse to report. Over 200 YP locomotives are playing on the N. E. Railway and so far, they have given satisfactory service.

29. Senior Loco & Fuel Inspector, A. P. Shukla of Varanasi travelled on the foot-plate of the locomotive No. 2288 YP on 25th May, 1969, while working 75 Up Passenger train ex-Aunrihar Jn. to Varanasi and was satisfied with its riding. The defects noticed by him were of very minor nature and not such as to make the locomotive unroadworthy. The repairs booked by him were attended to in Varanasi Loco Shed.

30. Carriage & Wagon Inspector, L. Babu of Varanasi examined the coaches of 6 Down Express train after the accident and testified the damage suffered by them as detailed in para 11(b). During his examination, he did not come across any defect or deficiency which could have caused or contributed towards the accident.

31. Driver, Paras Ram of 68 Down Passenger drove the train on 20th June between Allahabad City and Varanasi, hauled by YP engine No. 2288 YP which subsequently met with an accident. The engine, on this last trip preceding the accident, was running smoothly and nothing unusual was experienced on the run. The brakes functioned normally.

32. Driver, Purushottam of 71 Up Passenger train stated that on 20th June his train, hauled by a YP class of locomotive left Dulahpur at 21.00 hours and reached Jakhanian at 21.17 hours. The running on the Block Section was normal. Neither any lurch nor jerk was felt on the run. The train must have attained a speed of 52/55 Km/h while passing over Bridge No. 7. No one was seen in the vicinity of the bridge.

33. Driver, A. C. Niwas had driven 3 MB Up Through Goods train hauled by a YG class of locomotive, on 20th June between Dulahpur and Jakhanian stations, leaving the former at 22.30 hours and reaching the latter at 22.45 hours. The run on the section was normal. The Bridge No. 7 must have been passed at a speed of about 30 Km/h. No one was seen either on the line or in the vicinity of the bridge.

34. Driver, Sadiq Hussain of 76 Down Passenger stated that on 20th June the train, hauled by a YP class of engine No. 2637, left Jakhanian at 23.22 hours and arrived Dulahpur at 23.35 hours. Nothing unusual was felt on the section. The running was smooth and normal. The Bridge No. 7 must have been crossed at a speed of about 52 Km/h and neither any jerk nor lurch was felt on its approaches nor any one was seen in the vicinity. During his 3 years' experience as Passenger Train Driver on Varanasi-Bhatni section the running was generally found to be normal on Jakhanian-Dulahpur Block Section.

35. Permanent Way Inspector, R. S. Lal of Mau Jn. was informed by the Assistant Station Master at 02.10 hours on 21st June, that there was no news of 6 Down Express train reaching Dulahpur and that he should proceed at once. As he was about to leave by the engine of a goods train, information was received that the had train met with an accident near Bridge No. 7

between Jakhanian and Dulahpur. Same engine was utilised to work the Medical Van by which he reached the site at about 04.24 hours. After some rescue work, at about 5 O'clock, he accompanied the Assistant Engineer, Mau Jn., when he went across the bridge to ascertain the cause of the accident. They found one of the right rails between Telegraph Post No. 94/11-12 disconnected and lying further away from its original position to the right. The running-off end of the right intact rail, short of which the right rear-most wheel of the trailing, trolley of coach No. 7 was standing, had neither fishplates nor fishbolts. A loose undamaged fishplate was between the rails, a little ahead of the first point of the rupture of track. On the outside of the track to the right of the first opened joint, 3 fishbolt nuts were located. All the fittings, which held the first right rail in position with sleepers that supported it, were missing. Some loose permanent way materials as found on the bank slope to the right were—

10 steel keys in a bush; a steel key and a fishbolt without nut in the heap of boulder kankar; a 55-R fishplate in front of T. P. No. 94/11; 4 fishbolts without nuts, 2 steel keys and a jaw in another bush.

No damage was observed on the running on end of rail R1. The first sleepers, ahead of the first exposed joint, under the rail panel B1-R1 was intact and without any wheel riding marks. All left rails were properly connected with fishplates and bolts.

The section between Jakhanian and Dulahpur was inspected by Push Trolley on 12th May, 13th May, 14th June and 18th June and by Foot-plate on 15th April. During these inspections no defects were observed in Km. 94/1-13. In this kilometrage, greasing of fishplates and oiling of bolts were last done on 13th and 14th April, 1969. During his 3 years' stay, he did not experience any trouble with the maintenance of track in both the approaches to Bridge No. 7.

In his letter No. 222 dated 24-2-69, it was reported to the officer-in-charge RPF, Mau Jn. that keys and jaws were being frequently stolen from the railway track between Jakhanian and Pipri Dih. There was an attempted sabotage by removal of fishplates, keys and jaws on 19-7-68 in the approach to Bridge No. 7, more or less at the same place as in this case. The gangs on the section normally kept their tools in tool boxes located mostly at stations and only in few cases near gate lodges. No pulling back was done for a long time as it was not required. Levels and gauge readings in rear of the first point of derailment and ahead were taken soon after the accident in presence of the Loco Foreman and Traffic Inspector.

To questions, the witness replied : The nearest stacks of 55 lbs. IRS rail were at Dulahpur, about 4 Km. from Bridge No. 7; only about 18 casual labours were discharged in December'68 due to expiry of sanction.

36. **Assistant Permanent Way-Inspector, B.D. Tewari of Sadat** was informed at about 02.25 hours by the Assistant Station Master that he should be prepared to proceed as there was no news of 6 Dn. reaching Dulahpur. Coming to station, he contacted Jakhanian for line clear for Push Trolley but the latter advised him to wait as he has already sent gangman to enquire the whereabouts of the train. However, at 02.50 hours Jakhanian informed that the train has derailed in the section. He proceeded to the site by the engine of the Dn. Goods train, which by this time had arrived at the station. Having reached the site at 04.00 hours, he started looking for the cause of derailment when he observed that the right rail joint just ahead of the right rearmost wheel of the 7th coach was disconnected and had no fishplate or bolts. The rail ahead of the exposed joint was shifted to the right from its original position. By the light of his torch, he could see some permanent way fittings such as bolts and keys in the two bushes, being guarded by an RPF Sainik but he neither counted them nor took the particulars. He then engaged himself in rescue operations.

The section between Jakhanian and Dulahpur was inspected by him by Push Trolley 8 times during the month of June as detailed below :—

1st, 3rd, 5th, 6th, 8th, 14th, 16th and 17th.

During all these inspections no defect was found with the track. On 16th, loose keys were adjusted with liners between Km. 94-93/4 and the renewal of one timber and picking up of joints in the approaches to Bridge No. 7 were carried out on 17th. On both days, he was present. The track between Dulahpur and Jakhanian does not require any special attention during any part of the year.

37. **Gang Mate P. Singh of Gang No. 15** in whose jurisdiction the accident occurred, attended to the track at Km. 94/10-12 since April 1969 as detailed below :—

13th April	.	.	.	.	.	Oiling and greasing of fishplates.
24th April	.	.	.	.	.	Through packing Km. 94/11-12.
28th April	.	.	.	.	.	Through packing Km. 94/10-12.
21st May	.	.	.	.	.	Through packing Km. 94/11-12.
17th June	.	.	.	.	.	Changing one sleeper on Bridge No. 7 and picking up joints on its approaches.

During his stay for the last one and half year, the approaches to Bridge No. 7 have not given any maintenance trouble. The bridge and its approaches were last inspected by him on 17th June when the gang worked there. No adverse report was received from the Keyman since then. On being informed by the Assistant Station Master, Dulahpur, that there was no news of 6 Down, he deputed two of his gangmen to proceed to the section. They met the Fireman of the train somewhere near the Down Outer signal and returned with him. On receiving the news of the accident he proceeded to the site along with his men. By the time he reached there, the Permanent Way Inspector of the section had already arrived by Mau Medical Van. On 17th June, the sleeper renewal on Bridge No. 7 was carried out in presence of the Assistance Permanent Way Inspector Sapat.

38. **Keyman, Sati Ram of Gang No. 15** left Dulahpur at 06.30 hours on 20th June on foot and reached the farthest end of his jurisdiction at Km. 96/6 at 10.00 hours and returned to Dulahpur at 12.00 hours. The Bridge No. 7 and its approaches were in perfect order. There was nothing wrong with the track even during the week preceding the accident. No missing or loose keys and faws were found on the section during his round on 20th June.

39. **Assistant Engiaeer, D. B. Gupta of Mau Jn.** left by Mau Medical Van and reached the site at 04.25 hours. He went across the river at about 06.30 hours and found that the initial point of derailment was at the right rail joint, about 159 feet from the nearest bridge abutment which had no fishplates or bolts. The right rail ahead of it had laterally moved forward by about 18" and shifted sideways towards the cess. Both ends of this rail were without fishplates and bolts. The first mark of derailment was observed on the second sleeper under the rail panel L1-R1, ahead of the exposed joint. Most of bridge sleepers were extensively damaged at their ends to the rigid and many of them had become skew and some of them even bunched together due to drag of derailed wheel over them. Rails R2 and R3 were buried under the 5th and 6th coaches. One end of rail R4 was underneath the 4th coach and the other end was projecting beyond the abutment. Rails R5 and R6 were on the river bed and R7 was more or less in position on the bridge. R8, which had pierced through the first coach, was lying on its floor. Rail R9 and part of R10 connected, together had twisted and were hanging down the bridge. All left hand rails in the affected portion of the track were intact except a missing fishbolt from the joint L3L4. The guard rails over the bridge particularly those on the right side, were extensively damaged. One of them had broken into two pieces and was found hanging from the bridge. A portion of brick masonry of all cut-waters and both parapets was damaged. A shear crack appeared on pier No. 2, about 5' above the bed. Some loose fittings in two bushes being guarded by the RPF staff, were seen by him but they were neither examined nor counted. He, however, saw a loose fishplate between the rails a little ahead of the initial point of derailment. In addition, many other permanent way fittings, either damaged or intact, were scattered below the bridge. Along with the Permanent Way Inspector, he commenced checking the gang tools of Gang Nos. 14, 15 and 16 at 08.00 hours and no deficiencies came to light. The tool box of Gang No. 15 was locked and sealed in his presence. He carried out inspections on Jakhanian-Dulahpur section as detailed bellow :—

10-3-69	.	.	.	.	.	By motor trolley	No defects.
10-3-69	.	.	.	.	.	By Foot-plate	No defects.
15-3-69	.	.	.	.	.	By Brakevan	No record maintained.
16-4-69	.	.	.	.	.	By Push trolley	Alignment defective.
16-4-69	.	.	.	.	.	By Brakevan	Notes not recorded.
22-4-69	.	.	.	.	.	By Foot-plate	Notes not recorded.
13-5-69	.	.	.	.	.	By Push trolley	No defects.

14-5-69	.	.	.	.	.	By Brakevan	No defects.
14-5-69	.	.	.	.	.	By Foot-plate	No defects.
2-6-69	.	.	.	.	.	By Brakevan	Blowing joints at Km.94/11-12.

The joints at initial point of derailment were square with practically no creep at all. The Bridge No. 7 was last inspected by him on 16-12-68 when following notes were recorded :

- (i) The disturbed pitching to be reset.
- (ii) The tablet bearing the bridge Number should be replaced.
- (iii) Two line-sleepers on either side of the bridge to be changed.
- (iv) Few hook bolts loose and arrow marks, where not existing, to be done.
- (v) A few out of square sleepers to be adjusted. As the top boom is rivetless, the sleepers should be tied down with M. S. flats to prevent their going out of square.
- (vi) Gauge correct except 1/16" tight at one place on pier No. 3.
- (vii) Cross-levels correct.
- (viii) Three sleepers to be replaced.

All items were complied with between 22-1-69 and 17-6-69.

To questions, the witness replied : The track was tested by Hallade recorder on 13-11-68 and the defects recorded by it were :--

- (i) Defective alignment at Km. 94/2-3.
- (ii) Defective joints at Km. 94/5-6 and 94/8-9.

Km. 94/1 to 14 was through packed in the month of December 1968 when the above defects were rectified.

40. Divisional Engineer (I), R. C. S. Khichi of Varanasi, reaching the site at 06.45 hours by the Breakdown train, commenced taking particulars of the derailed coaches and the track components along with the Divisional Superintendent.

It was observed by him that the last three coaches of the train were intact on rails and the seventh coach (GT 8082) had derailed of the front trolley and the right leading wheel of the trailing trolley. The rearmost pair of wheels of the coach was just short of the exposed joint at the running off end of rail R0. The rail R1, without fishplates and bolts at both ends, was lying on its side with head facing the track axis and its running-on end had shifted by 4'-6" from its original position to the right, and had moved forward by 18". Later on when this rail was examined in detail after salvage operation, it was observed that the gauge side bottom flange had a distinct cut mark at a distance of 17' from the running on end caused by wheel mounting and from here, deep wheel grazing marks were observed along the web practically upto the running-off end. The fishbolt holes at both ends of the rail were intact and did not show any sign of damage.

The Guard showed him 4 fishbolts without nuts, 2 steel keys and a jaw lying in a bush on the bank slope to the right, which were being guarded by the police as well as the RPF.

First dent mark, caused by a derailed wheel was observed on the second sleeper under rail panel L1-R1. The dismembered running-on end of R2 had its head, web and foot dented by the passing wheels and this end of the rail had slightly bent down. The Guard rail GL.3 was over-turned on its side by derailed wheels and wheel riding marks were observed on the web. A portion of masonry of both abutments parapet and all cut-waters of piers was damaged by the rolling stock that plunged on to the river bed. 26 stiffeners of right girders in the first four spans were slightly damaged. Shear cracks appeared on pier No. 2 about 16'-8" from the top.

To questions, the witness replied : according to his recollections, the battery box of 7th coach was pressing down the running-off end of rail R1 and in that position, in his opinion, it could not be removed by anybody; one loose intact fishplate without bolts but with holes normal was found on the 4th sleeper under rail panel L1-R1; besides this, there were 3 loose nuts outside the first exposed joint.

41. Senior Deputy Chief Engineer (Track), L. C. Agarawal, Gorakhpur reached the site of accident at 14.30 hours when he found the area was cordoned off by the Police and no one was allowed to interfere either with the track or the coaches except to the extent required for rescue operations. When he started looking for the clue which caused the derailment, he came across the opened joint without fishplates at the running-off end of rail RO, about 2' ahead of the rearmost right wheel of coach No. 7. There were 3 loose nuts lying on the outside of the joint, one near the joint sleeper and 2 between the joint sleeper and the one next to it in the rear. The joint LOL1, opposite the one that was opened, was intact and undisturbed. The joint sleeper at the running-off end under the rail panel LO-RO was intact and undisturbed except for a missing key on the gauge face side of the rail RO. The first forward sleeper, ahead of the exposed joint, was in position undisturbed and bore no marks of damage but the fittings at the right rail seat were missing and those on the left were intact but loose. The sleeper next to it was, however, disturbed and bore a mark of a derailed wheel at a distance of 29" from the gauge face of rail L1. All other sleepers beyond this were extensively damaged, bent, flattened and bore number of wheel marks. The rail R1 was lying on its side with head towards the track axis and had moved forward by 1'-6" and shifted laterally at its running-on end by 4'-6" from its original position. Both ends of the rail had no fishplates attached to them nor any marks of damage could be seen and the fishbolt holes were normal. A deep cut mark, obviously caused by wheel mounting, was observed on the edge of foot towards the gauge face at a distance of 17'-0" from the running-on end of R1, followed by deep wheel riding marks on the web which extended practically upto the running-off end. The running-on end of rail R2, which was disconnected and had no fishplates attached to it had deep dent marks on head, web and flange caused by the derailed wheels hitting against it. The running-off end of the rail was connected with rail R3. He confirmed the evidence of the Permanent Way Inspector in regard to loose permanent way fittings found on the bank slopes to the right—para 35. In addition, on 22nd June he discovered 15 undamaged keys, a dog spike and a jaw in a bush, about 55' ahead of T. P. 94/11 and a key and a fishbolt in stack of Block Kankar at the toe of the bank to the right opposite the first exposed joint.

42. Divisional Superintendent, P. N. S. Bedi of Varanasi examined the track at 07-30 hours and corroborated the evidence of the Divisional Engineer (I)—para 40. His talk with some of the passengers revealed that nobody had touched the track and track fittings after the accident.

43. Passenger, Sri Bachan Singh of Village Kaneri felt severe jolts shortly after passing Jakhanian station. About 20 minutes after the accident when he saw the Guard walking forward he alighted from the train and started walking behind him to see what had happened. In Guard's torch light, it could be seen that the joint of right hand rail just ahead of the right rearmost wheel of the 7th coach was opened and had no fishplates. The rail ahead of the joint was lying about 3' away from its original position to the right. In a bush a little down the bank to the right, he saw some bolts.

44. Passenger, Sri K. P. Singh of Village Kaneri student of B.Sc., Part I while travelling by 6 Down, experienced severe jolts shortly after passing through Jakhanian. About 20 to 30 minutes after the accident, he started walking towards the front when he met the Guard of the train who was walking ahead. In the light of his torch he could see an open joint of the right rail just little ahead of the trailing pair of wheels of the trailing trolley of the 7th coach. The rail ahead of the joint was about 3' away from its original position to the right. It appeared to him that the rail must have been placed in that position beforehand.

45. Passenger Dr. S. N. Chaube, Pathologist, S. S. P. G. Hospital Varanasi was travelling in 'A' compartment of the first class coach which was 7th from the engine. Somewhere between Jakhanian and Dularhpur, while asleep, he rolled down from the berth. The coach was standing at an inclination which made it difficult for him to get up. Shortly after, some passengers came to him for First Aid. While he was busy in this, the Guard came to him after about half an hour of the accident and requested him to see the disconnected joint under the coach in which he was travelling and the loose fittings lying in a bush on the bank slope to the right opposite where the joint was disconnected and the rail ahead of the exposed joint lying sideways and shifted laterally to the right. This he did and confirmed what the Guard had said. The loose fittings in the bush, when seen through torch light, appeared to be intact and without any damage. The medical assistance rendered, the care and attention given by the railway officials in looking after the comforts of passengers as well as patients were very commendable indeed.

VI. DISCUSSION

46. **Time of the Accident.**—According to the Guard of the train, the accident occurred at 01.10 hours-para 15 and his evidence has been supported by the First Class Coach Attendant and Brakesman-paras 21 and 22.

The train left Aunrihar Jn. at 00.33 hours, 24 minutes late and ran non-stop until the accident. It passed through Jakhanian at 01.04 hours thus making up 5 minutes on the run. The distance between Jakhanian and the site of accident is hardly 4.4 Kms. According to the Teloc speed recorder the train passed through Jakhanian at 01.01 hours and the speed suddenly dropped to 0 at 01.07 hours. There appears to be difference of 3 minutes between the watch of the Guard and the clock of the speed recorder, the former being in advance.

There is hardly any doubt that the accident occurred at 01.10 hours.

47. **Speed at Derailment.**—The speed recording graph roll in the sealed Teloc Speedometer-cum-recorder, which was removed in my presence showed that the speed of the train at derailment was 62 Km/h, well below the maximum speed of 75 Km/h authorised on the section. At my instance after the accident the speedometer of the train was tested with the master speedometer and found no error. The Guard's journal showed the time of running through Jakhanian station as 01.04 hours and the time of accident was 01.10 hours. In 6 minutes, therefore, the train had covered 4.40 Kms. In Guard's estimation the train's speed was 65/66 Km/h at accident and that of the Brakesman 60/70 Km/h-paras 15 and 22. The speed of train as indicated by the Teloc chart i.e. 62 Km/h is to be accepted.

48. **The Locomotive.**—(a) Engine No. 2288 YP which hauled the 6 Down Allahabad Express was first put in service in the year 1956. It belongs to Varanasi Loco Shed which serves all passenger train services between Allahabad-Bhatni Jn. and Aunrihar Jn.-Chupra Jn. sections.

The record of engine history, as made available by the Divisional Mechanical Engineer, Varanasi, reveals that the engine had covered 1,38,325 Kms. since its last POH in September '67. The IOH was carried out in October '68 and the engine has earned 66,793 Kms. since then. The record shows that the maintenance repair schedules I to III were systematically adhered to. The last Schedule I examination was done on 17-6-69, Schedule II examination on 5-6-69 and Schedule III examination on 7-3-69 and since then the engine has earned 795 Kms., 3,986 Kms. and 26,430 Kms. respectively. The locomotive was due Schedule IV examination on 30th April when it had earned 55,793 Kms. after the last IOH examination. This was, however, not carried out on due date on account of large number of staff absenting during May and June 1969. At the time of Schedule III examination on 17-3-69, tyre and flange measurements of the locomotive were taken and axle box clearances were checked. As these measurements were well within the permissible limits and not likely to be altered materially in such a short time, the locomotive was permitted to remain in service even after 30th April, the due date of Schedule IV examination. The wheel tyre and flange measurements taken after the accident have not exceeded the permissible limits and axle box clearances have yet to be checked when the locomotive is railed.

(b) All entries recorded in the engine Repair Book since April 1969 were of a minor routine nature and generally attended to. The engine was last attended to at Varanasi Home Shed on 20th June when minor repairs booked in the Engine Repair Book were complied with before working the ill-fated train.

(c) The Second Fireman, who survived in the accident, has testified to the working of the engine which was normal and to the efficient functioning of the brakes right through. The Senior Loco Inspector, Varanasi, who last travelled on the foot-plate of the locomotive on 25th May, 1969, while working 75 Up Passenger train ex : Aunrihar Jn. to Varanasi, was satisfied with its riding quality. The defects noticed by him were of very minor nature and subsequently attended to in Varanasi Loco Shed.

(d) The engine was thoroughly examined by the Loco Foreman, Varanasi and also by the Assistant and Divisional Mechanical Engineers, Varanasi, after the accident. Damage was confined mainly to bending and denting the roof of Driver's cab, breakage of all steam manifolds and middle safety valve and damage to two others. The dome lagging was badly dented. The clack valves and chimney at the corner were broken. The turbo generator was dislodged from its bracket. The smoke box wrapper plate on the right side of the boiler was depressed and the hand all rail bracket

at this point gave way. The tender underframe as its breakgear suffered extensive damage, the right sole bar bent due to severe hitting, probably, by a rail. The right longitudinal girder bore a deep dent mark at the centre and both the trolleys dislodged on account of breakage of one of the pivot pins and the other dropping off. The leading pair of wheels of both the trolleys had dislodged from their axle guards. All bogie wheels of the locomotive, both leading, right driving and left trailing wheels had received either dent, scratch or abrasion marks. Right front and right rear wheels of the front trolley of the tender bore prominent dent marks. There is little doubt that the damage was due to derailment and capsizing of the locomotive down below the bridge. Tyre profiles, wear on tyres and gauge of all wheels of the locomotive and tender were all within the permissible limit.

(e) The driver who drove the engine on the trip immediately preceding the accident, was satisfied with its riding quality-para 31.

Over 200 YP class locomotives, the same class that was involved in the accident, are plying on the N. E. Railway and they have so far given satisfactory service.

On the evidence, I am satisfied that the engine was in roadworthy condition and there was nothing in its history to indicate any defect which, if unattended to, would cause a derailment.

49. Coaches.—(a) The record shows there was no coach on the train that was overaged or overdue POH. The examination of the undergears of 6 Down Express was carried out at Allahabad City on 20th June before its departure when two brake-blocks, which were found reversed, were adjusted, loose brake-gears of one of the coaches were tightened and 4 worn out brake-blocks were replaced. No defects were observed when the rake was examined again at Varanasi on its arrival.

(b) After the accident, the Divisional Mechanical Engineer and the Carriage & Wagon Inspector, Varanasi, examined the coaches thoroughly at site and the results of the examination recorded coach-wise have been filed as part of the proceedings. The significant damage to the coaches is detailed in para 11(b). I am satisfied that the records depict the correct position.

(c) (i) **Wheels and axles.**—All axles were gauged and found within the prescribed limit except that of the rear pair of wheels of the trailing trolley of the first coach which was 1" tight on account of the axle which got bent in the accident. Wheel tyres and flanges were of satisfactory profile and properly secured on the wheel centres.

(ii) **Axle boxes.**—They were intact and suffered no damage. There was no sign of heating of any journal bearing. The clearance was within the specified limit.

(iii) **Brake assemblies.**—Brake-blocks, brake heads, keys and adjustors remained attached to the coaches excepting those which capsized where they were not so in all cases.

(d) The damage to coaches detailed in para 11(b) was obviously the after effect of the accident.

The condition of the coaches was satisfactory and there was no defect or deficiency which could have impaired the roadworthy condition prior to derailment.

50. Permanent Way.—(a) The rail wear is less than 14, much below the permissible limit and the rail condition was generally satisfactory. The general condition of sleepers and fastenings was also satisfactory. There is no curve on the section. Over a distance of half mile in rear of the initial point of derailment the track was carefully checked for loose fittings and fastenings and for line, level and gauge. The results were very satisfactory, spot variations upto 1/16" being considered insignificant.

(b) In the normal course of maintenance the track at Km. 94/10-12 was attended to as indicated below :—

13th April	Oiling and greasing fishpates.
24th April	Through packing Km. 94/11-12.
28th April	Through packing Km. 94/10-12.
21st May	Through packing Km. 94/11-12.
17th June	Changing one sleeper on Bridge No. 7 and picking up joints on its approaches.

(c) Evidence shows that the following inspections of the track on the section were carried out :

(i) **Divisional Engineer**—By trailing window on 2-12-69 and 13-1-69, Motor trolley on 19-2-69 and Foot-plate on 22-5-69. Minor defects which came to light during these inspections were attended to.

(ii) **Assistant Engineer**—By Motor trolley on 10-3-69, Brake-van on 15-3-69, Foot-plate on 10-3-69, Push trolley and Brakevan on 16-4-69, Foot-plate on 22-4-69, Push trolley on 13-5-69, Brakevan and Foot-plate on 14-5-69 and Brake van on 2-6-69. During these inspections, defective alignment was observed on 16-4-69 and blowing joints at Km. 94/11-12 on 2-6-69, which were subsequently attended to.

(iii) **Permanent Way Inspector**—By push trolley on 12th, 13th May, 14th June and 18th June and Foot-plate on 15th April. No defects were observed during these inspections.

(iv) **Assistant Permanent Way Inspector**—By push trolley 8 times in June, the last one was on 17th June when the replacement of one timber on the bridge and picking up joints in its approaches were done in his presence.

(v) Mate, in whose length the accident occurred, inspected the bridge and its approaches on 17th June when the gang worked there in the presence of the Assistant Permanent Way Inspector of the section. The Keyman, who walked over the section on 20th morning, did not observe any defect nor on his daily round during the preceding week.

(d) The track was last tested by Hallade recorder on 13-11-68 and the minor defects recorded by it at 3 places were attended to when Km. 94/1-14 was through packed in December, 1968.

(e) In the evening of 20th June, 5 Down and 2 Up trains passed over Jakhanian-Dulahpur section as detailed below :—

72 Down

Dep : Jakhanian	17.44	hours.
Arr : Dulahpur	17.58	hours

6 MB Goods.

Dep : Jakhanian	19.00	hours.
Arr : Dulahpur	19.20	hours

Dn. GKP Spl. Goods.

Dep : Jakhanian	20.08	hours.
Arr : Dulahpur	20.30	hours

71 Up Passenger.

Dep : Dulahpur	21.00	hours.
Arr : Jakhanian	21.12	hours.

Dn. GD Spl. Goods.

Dep : Jakhanian	22.00	hours.
Arr : Dulahpur	22.20	hours.

3 MB Goods.

Dep : Dulahpur	22.30	hours.
Arr : Jakhanian	22.50	hours.

76 Down Passenger.

Dep : Jakhanian	23.22	hours.
Arr : Dulahpur	23.35	hours.

(f) Gangman ceased working before the nightfall. Had the track not been in satisfactory state of maintenance, the above 7 trains could not have passed on the section safely.

(g) **Bridge No. 7.**—During his annual inspection of the bridges in December 1968, the Assistant Engineer found its general condition quite satisfactory. A few minor items of repairs recorded by him were complied with para 39. It was last inspected by the Assistant Permanent Way Inspector on 17th June, when a bridge timber was replaced in his presence.

(h) The drivers of last 2 and the 4th trains preceding the accident, and the Second Fireman of the ill-fated train have all found the running section normal. They neither felt any jerk nor lurch-paras 18, 32 to 34.

(i) Thus the possibilities of derailment having been caused by any defect in the track or bridge must be excluded. The track on the section was in roadworthy condition until between 23.35 hours and 01.10 hours when 6 Down Express train was derailed at Km. 94/12-11.

51. **Place of derailment**—Photographs taken by the railway from various positions of the place of derailment and of the loose components in the morning of 21st June were shown to me and I selected 9 photographs which are appended, marked 1 to 9 for reference. They show :—

- (a) **Photograph No. 1**—The exposed running-off end of the right intact rail RO, a little ahead of the rearmost right wheel of the 7th coach at the initial point of derailment without fishplates; the fish-bolt holes normal without any marks of violence; 3 loose nuts outside the exposed joint, one in between the joint sleepers and others between the joint sleeper under running-off end of RO and a sleeper next to it in rear; the rail R1 lying away towards cess side with head facing the track axis and without fishplates attached to its running-on end; the leading right wheel of the trailing trolley of the 7th coach resting on the 3rd forward sleepers from the first point of derailment.
- (b) **Photograph No. 2**—A loose fishplate on the 4th forward sleeper from the exposed joint as viewed from the left side; the left leading wheel of the trailing trolley of the 7th coach; the left rail L1 intact with fastenings over 3rd to 5th sleepers.
- (c) **Photograph No. 3**—A prominent cut mark of wheel mounting on the edge of foot on gauge side of rail R1 at 17'-0" from the running-on end.
- (d) **Photograph No. 4**—Running-on end of R2 with deep dent marks on head web and foot.
- (e) **Photograph No. 5**—Loose steel keys in a bush, about 55'-0" ahead of T. P. 94/11.
- (f) **Photograph No. 6**—Two bolts without nuts in a bush on the bank slope to the right opposite the first exposed joint.
- (g) **Photograph No. 7**—General view of the accident as viewed from across Bridge No. 7 in the opposite direction of motion of the train.
- (h) **Photograph No. 8**—Some of the left rails properly connected and in the background the position of the derailed coaches No. 5 & 6.
- (i) **Photograph No. 9**—The locomotive capsized on its left on the bank; part of rail R10 properly jointed with R9 hanging down the last span of Bridge No. 7.

52. The material evidence at the point of derailment and elsewhere with reference to the photographs and the drawing is appended below :—

- (a) The right running-off end joint of rail RO was disconnected. The rearmost wheel of the 7th coach is standing on the rail RO, short of the running-off end and the wheel ahead is on the 3rd forward sleeper. The rail R1, without fishplates at the undamaged running-on end, shifted away from its original position towards the cess with head facing the track axis—photograph No. 1. With the position of right wheels of the trailing trolley of the 7th coach, it would be impossible to disconnect and remove the rail R1 from its original position after the accident without jacking the coach wheels and place it as shown in photograph No. 1. The sleepers and fastenings under the rail panel LO-RO were undisturbed except for a missing key from the inside of the joint sleeper under the exposed end of rail RO. The first steel joint sleeper under the rail panel L1-R1 was intact without any marks of derailed wheels and undisturbed but all the sleeper fittings holding the right rail were missing. The first mark of derailment was, however, observed on the 2nd sleeper.
- (b) A loose fishplate, probably removed from the first exposed joint, was thrown over the 4th sleeper under the rail panel L1-R1. The left rail L1 is held in position over 3rd to 5th sleepers. The leading left wheel of the trailing trolley of the 7th coach is on the rail above the 3rd sleepers—*photograph No. 2.

*Not reproduced.

- (c) One of the wheels where it mounted the gauge side foot of the rail R1 at 17' from the running-on end while it was lying on its side with head facing away from the track axis, left a deep dent mark on it. Then it travelled on the web where riding marks are observed. This and other wheels, which successively followed, battered the running-on end of the next rail in its normal position—photographs Nos. 3 & 4.
- (d) 15 steel keys, a dog spike and a jaw, all undamaged, were picked up from the bush when permission was granted by the Police—*photograph No. 5. From another bush, 4 bolts without nuts, 2 steel keys and a jaw, without damage, were similarly recovered—*photograph No. 6.
- (e) None of the fastenings from the joints of left rails was tampered with except a fish-bolt that was missing from the joint L4L5—*photograph No. 8.
- (f) Fishplates of 7 joints viz. ROR1, R1R2, R3R4, R4R5, R6R7, R7R8 and R8R9 were dismembered. Of the 10 fishplates, loose and scattered recovered so far after the accident, 6 are damaged and the rest intact.
- (g) Fish-bolts of the 32 bolts that were missing, 18 have been recovered so far. Of these 10 have been sheared and the rest are undamaged. Of the 8 broken shanks with nuts found at site, 6 match with the sheared bolts. Of the undamaged bolts, one was with nut screwed on the shank.
- (h) **Keys & Jaws**—Steel keys and jaws, each 236 numbers required to fasten rails with steel sleepers, 146 and 117 respectively have been accounted for so far. Of these only 31 keys and 18 jaws are damaged.
- (i) **Dog-spikes**—1664 dog-spikes have been recovered out of 1894 required to hold the running and guard rails in position with wooden sleepers. Of these, 1291 are intact.
- (j) Prominent cut, dent and/or abrasion marks on wheels of the locomotive and coaches, which resulted when they struck against rails or similar hard objects, are detailed in para 11(c).

53. Tools in the custody of Gang Nos. 14, 15 and 16 were checked by the Assistant Engineer along with the Permanent Way Inspector in the morning of 21st June. No deficiency came to light.

54. The rails and fastenings of the rail panel LO-RO were intact and undisturbed, levels and gauge being satisfactory, spot variations upto 1/16" being considered insignificant. The evidence shows no damage or disturbances to the track. The dismembering of the first exposed joint of fishplates by derailment, therefore, could safely be ruled out. The first mark of derailment was observed on the 2nd forward sleeper from the initial point of derailment. The derailed wheels have jumped over the first intact forward sleeper as expected. There was no damage to either end of rail R1.

55. After a rapid survey of the scene of the accident, the guard of the train escorted by two RPF Sainiks, observed in the light of a torch the exposed end of a light rail between 2 wheels of the trailing trolley of the 7th coach and a complete rail which was displaced ahead of that rail-end well away from its former intact position. The break of continuity of track has been described in para 4 (c) (iii) previous. The Guard also observed loose track components, like fishplates, keys, fish-bolts and nuts lying in the vicinity of the place where the rail was removed. The observations made by the Guard and the two RPF Sainiks were supported by the statements of 3 passengers in the train, one of them a Doctor. The Divisional Superintendent and his Officers who reached the site 5½ hours after the occurrence of the accident testified to the deposition made by the Guard.

56. There can hardly be any doubt that one whole rail was removed at Km. 94/12-11, about 164 feet South of the first abutment of the girder bridge. The rail fittings and keys probably belonging to the displaced rail were found in the vicinity in undamaged condition.

Two right-side wheels of the trailing trolley of the 7th coach had straddled the exposed rail end when the coach came to rest. The running-on end of the intact rail next to the removed rail was battered by the wheels, some of which had dent marks. The displaced rail itself was hardly damaged.

*Not reproduced.

An intact rail cannot be forced out by the wheels without severely damaging the rail, the rail fittings and sleeper fastenings.

57. As stated in para 50 (e), 7 trains passed on section between 17.44 hours and 23.36 hours on 20th June, one last one being the 76 Down passenger train at 23.35 hours. The drivers of the last two trains and that of 71 Up passenger, who were examined, testified that the running on the section was normal and did not find anybody in the vicinity of Bridge No. 7-paras 32 to 34. It is not possible to imagine that due to any negligence on the part of the gang, rail joints should have remained disconnected and a rail displaced from its normal position after the removal of all fixtures. The test that was carried out in connection with the derailment of 37 Up Prayag Fast Passenger on the N. E. Railway on 14th March, 1968, it was established that it would not take more than 3 minutes for a gang khalasi to disconnect a rail joint. By day, hammering out of 19 ordinary and 13 not removable keys could be done in about 9 minutes. 2 gang khalasies would hardly take 5 seconds to tilt a rail on its side after the removal of all fixtures. In this particular case there was a gap of 1 hour 35 minutes between the last train and the accident, which time was more than adequate to tamper with the track even during the night time.

58. On 19th July, 1968, at Km. 94/12-11, the same kilometrage as the accident, 4 joints were tampered with by removing fish plates. However, of the 6 fish plates that were again loosely attached with only 6 bolts, 5 were reversed. 27 keys and equal number of jaws were also removed at random. Although, the alignment was disturbed slightly, fortunately the mishap was averted as sufficient number of sleeper fastenings were not removed.

59. On the evidence, I am satisfied that there was no unusual circumstances nor failure of any railway equipment nor mal-operation in the working of the 6 Down Express train that could have led up to the accident.

60. A driver has several duties to perform. Even if it was possible for him to keep his eye constantly on the track ahead, it is considered that discontinuity in track would be impossible of detection at high speed in time to avert a derailment, even in daylight.

61. It appears that the offenders were aware of the track structure and chose a spot on high bankclose to a bridge where they can carry out a nefarious deed and take shelter under the bridge in the face of an approaching train which is visible from a long distance in either direction. Moreover it would inflict the maximum damage.

VII. CONCLUSION

62. **Cause of the accident.**—On full consideration of the factual material and circumstantial evidence, I have reached the conclusion stated below :—

(a) The derailment of the 6 Down Allahabad-Gorakhpur Express train on the night of 20th/21st June, 1969 between Jakhanian and Dulahpur stations on the North Eastern Railway was the result of a deliberate act of sabotage of track.

The dastardly act was committed by persons unknown who opened the joints and fastenings of a rail, 39 feet in length, at Km. 94/12-11 and displaced it from its former intact position.

(b) The offenders, having apparently planned to inflict the maximum damage upon the train chose to break the continuity of the track on the approach of a girder bridge where the embankment is 22 feet in height.

Discontinuity of track, in day-light or in the engine headlight at night, is impossible of detection at high speed to avert an accident. The speed of the Express train was well below the maximum of 75 Km/h authorised on the section. No responsibility can possibly lie on Driver P. C. Banerjee who was killed in the gruesome disaster.

63. **Relief Measures.**—The guard of the train gave greater importance to protect the train first before arranging to convey the news of the accident. He should not have gone himself but could have utilised the services of Brakesman who was travelling in his compartment for the purpose. Had he not acted in the way he did, the information of the accident, could have reached Varanasi at least 25 to 30 minutes earlier. But for the above I am satisfied that the relief arrangements were as efficient as could be expected in the circumstances.

Yours faithfully,

(Sd.) G. S. PANDOR,

Additional Commissioner of Railway Safety,
North Eastern Circle, Calcutta.

CALCUTTA;
Dated, the 2nd July, 1969

Recommendations and Incidental Observations and Recommendations made by the Commission of Railway Safety in connection with derailment of 6 Down Allahabad-Gorakhpur Express train between Jakhanian and Daulahpur stations, N. E. Railway, on 21st June, 1969.

A. Recommendations : Nil.

B. Incidental Observations and Recommendations :

1. Not only the engine of the ill-fated train but also 4 others, which are homed in Varansi Locoshed were overdue Schedule IV examination by over 2 months on the day of accident. The inability to adhere to schedules accounted for was due to large number of staff absenting during the months of May and June. The Railway Administration should take adequate steps to ensure that no schedule examination of any locomotive falls into arrears.

2. It is observed that action taken was not recorded in all cases of repairs booked by the drivers in the Engine Repair Book of the locomotive that hauled 6 Down. The omissions highlight the failure to scrutinise the Engine Repair Book periodically at appropriate levels. The Railway Administration should take appropriate action to enforce strict compliance of the instructions in this regard.

3. It is observed from the Teloc chart taken out of 6 Down locomotive that speeds through yards were invariably very much in excess of the maximum permitted. Although the speed charts are scrutinised in the shed to ascertain whether any permanent or temporary restriction has been observed but of late the staff at fault are not suitably dealt with. This defeats the very purpose of equipping locomotives with speed recorders. Necessary instructions already issued should be reiterated for ensuring strict compliance.

The stations on the section are equipped with Rudimentary Interlocking, the speed over the points, facing and trailing, being restricted to 15 Km.p.h. It is therefore, desired that the N.E. Railway Administration should take steps as suggested above.

Railway Board have remarked as under on the above noted Incidental Observations and Recommendations.

1. The Railway Administration is taking steps to see that schedule repairs are done in time.
2. The Railway has noted it for compliance. Instructions on the subject are being reiterated to all the Railways.
3. Instructions on the subject have been re-iterated by the North Eastern Railway.